

## Our Promise

We engineer opportunity for minorities in STEM.

## Our Mission

To ensure American competitiveness in a flat world by leading and supporting the national effort to expand U.S. capability through increasing the number of successful African American, American Indian, and Latino young women and men in science, technology, engineering, and mathematics (STEM) education and careers.

## Our Vision

An engineering workforce that looks like America.

## Our Belief

Diversity drives innovation.

## Our Purpose

Through partnerships with like-minded entities, we serve as a catalyst to increase the proportion of African American, American Indian, and Latino young women and men in STEM careers. We inspire and encourage excellence in engineering education and career development toward achieving a diverse and dynamic American workforce.

**Shaping an American STEM workforce where diversity drives innovation and global competitiveness**

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## NEXT GENERATION SCIENCE STANDARDS AND COMMON CORE STATE STANDARDS

### Policy Recommendations

**Revise Teacher Training:** The Next Generation Science Standards (NGSS) cover scientific topics in detail, and require teachers to have high content knowledge and the pedagogical skills to help students become active learners in the classroom. This requires a shift in traditional teacher training methods, with a **greater emphasis on understanding scientific and engineering practices**. It also requires teachers to have a **greater understanding of culturally-relevant pedagogical techniques** that are effective with underrepresented minority (URM) students, to ensure that the content is taught effectively, irrespective of

students' demographic characteristics. Alternative teacher certification programs, which enroll a higher percentage of potential URM teachers, must also be tailored to the new standards.

### Receive Input from Developmental Experts:

The committees who developed the Common Core Learning Standards have been criticized for excluding developmental experts and early childhood teachers (Strauss, 2013). These experts are needed on committees at the state and federal level to help the standards incorporate relevant, topical research and to ensure their appropriateness for all children.

### Key Challenges

A key challenge across K-12 education is inconsistent quality of instruction. In a study of 11,115 teachers across 723 schools in 10 school districts, the National Center for Education Evaluation and Regional Assistance found that the **highest performing teachers were underrepresented in the most disadvantaged middle schools** (NCEE, 2011). Another study showed that in 23 states, state and local governments were spending less per pupil in

the poorest school districts than they were in the most affluent school districts (Brown, 2015). Underrepresented minorities disproportionately attend high poverty schools (where more than 75 percent of the student body is eligible for free or reduced lunch), as seen in Figure 1.

Testing results indicate that the inconsistent quality of STEM instruction and the lack of resources available to underserved communities are affecting America's STEM competitiveness. On the Program for International Student Assessment

Table 1.  
**Average mathematics and science literacy scores of 15-year old students by country, 2012**

Country	Average Math Literacy Score	Average Science Literacy Score
United States	481	497
Canada	518	525
Finland	519	545
France	495	499
Germany	514	524
Ireland	501	522
Italy	485	494
Japan	536	547
Netherlands	523	522
Spain	484	496
United Kingdom	494	514
OECD Average	494	501

Scale is 0-1,000  
Source: OECD, 2013

(PISA), which measures 15-year old students' reading, mathematics, and science literacy, students from the United States ranked 27th out of the 34 Organization for Economic Cooperation and Development (OECD) countries in math, and 20th in science (see Table 1 for information on specific countries). It is clear that interventions are needed to alter this trend.

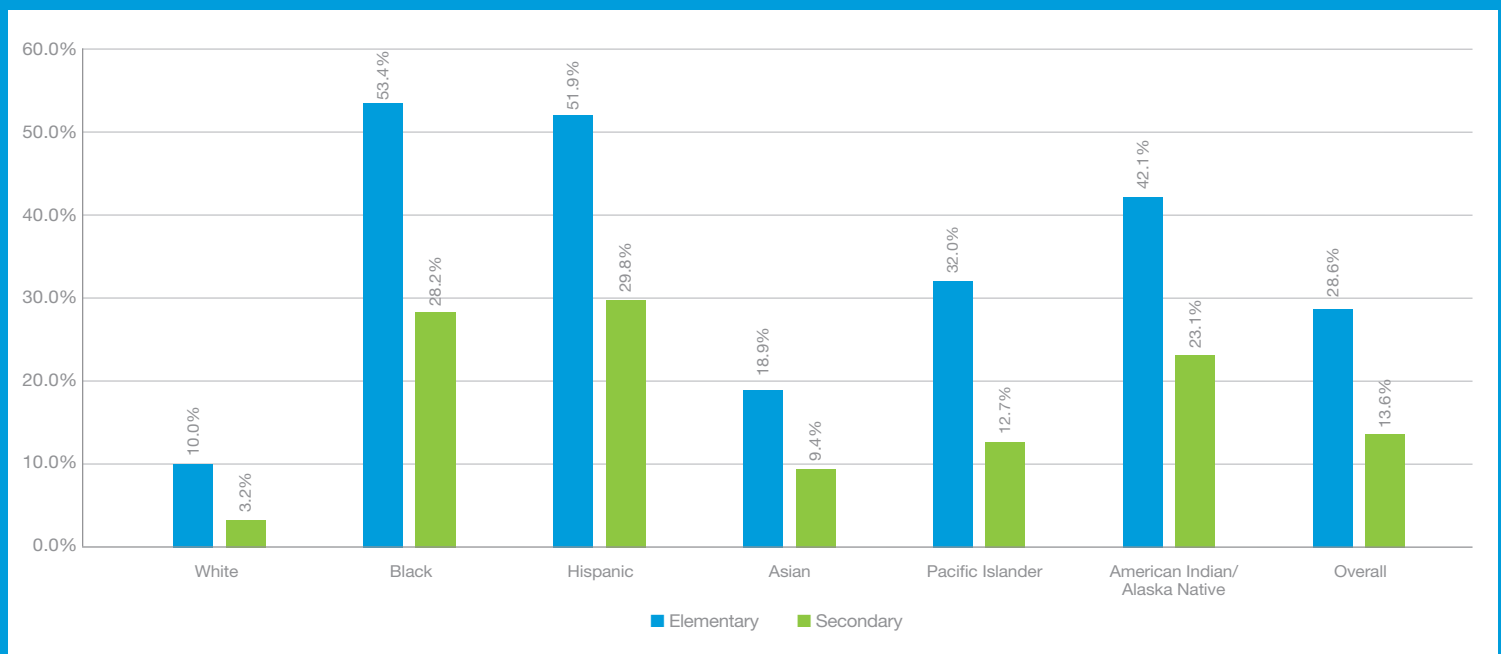
The **Common Core** is a set of mathematics and English/Language Arts (ELA) academic **standards that were created to ensure that all students graduate from high school with the skills and knowledge needed to succeed** in post-secondary education and careers. The **Next Generation Science Standards (NGSS)** were developed to **provide students with an internationally benchmarked science education**. The standards assess the students' understanding of core ideas together with their practice of science and engineering (Next Generation Science Standards, 2015).

While improvements are needed across the educational spectrum, there is great debate on whether these standards are the best method of implementing positive change. One critique of the Common Core Standards centers on the lack of input that educators had in informing

them. In a review of the committees who wrote and reviewed the standards, none of the 135 committee members were found to be K-3 classroom teachers or early childhood professionals (Strauss, 2013). Input from these experts could help to ground the standards in research. Of equal importance is ensuring that the standards are culturally relevant to underrepresented minority groups, which is an overlooked deficit in STEM education. In the National Indian Education Study 2011, 60 percent of American Indian/Alaska Native eighth grade students reported that their teachers never had them solve math problems that reflect situations in their community (NCES, 2012). Standards are needed to ensure that **all students are properly instructed and fairly assessed**.

We believe that diversity drives innovation and that its absence imperils our designs, our products, and, most of all, our creativity—all components of competitiveness. While these standards have great potential, lawmakers and policymakers must **use them to help close the achievement gap**, and reduce the inconsistency in STEM instruction.

Figure 1.  
Percentage Distribution of Public School Students Enrolled in High Poverty Schools by Race and Ethnicity, 2012-13



Source: Source: U.S. Department of Education, 2012-13

## References

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